THE PROBLEM OF THE CATS AND RATS.

How Many Rats Can a Cat Kill in a Year if She Is an Expert at Rat Catching?

THE West Indian Islands have got a complex puzzle in cats and rats to tackle that beats the Australian rabbit problem all hollow.

It has been told how the ravenous rats destroyed the sugar plantations in the island of Jamaica, so that the planters imported great numbers of Indian mongooses, an active species of ferret, which is the natural enemy to rodents. But when the rats were nearly exterminated it was found that there was a poisonous kind of a wood-tick which the rats used to kill, which then became so numerous that they speedily killed off the mongooses, which revived the rat era again, and once more the sugar planters are suffering. This almost upset the entire island.

But on the neighboring island, in the still more discontented republic of Hayti, the problem has assumed a different phase, and our colored brothers are at their wits' ends to get rid of the hordes of rats which infest their grain fields. If some modern Wittington would only enact once more the familiar story of his famous cat the bells would proclaim him Lord Mayor of the whole island, or President to succeed the unfortunate Heureaux, whose assassination was due to the desperate straits of the planters.

The destruction of the rats would require so many cats, which could only be kept in check by the dogs, which would have to be worried by cows "with crumpled horns," which are milked by maidens "all forlorn," that to correct the evil we have to go back, in the words of a Boston poet, to

"The loud, cantankerous Shanghai, the noisiest,
Whose crow aroused the shorn ecclesiast,
Who sealed the vows of Hymen's sacrament,
To him, who roped in garments indigent,
Exosculates the damsel lachrymose,
The emulgation of that horned brute morose,
That canine tossed, which feline worried, that kilt
The rats that ate the malt that lay in the house that Jack built."

But all joking aside, it is a serious problem, worthy the attention of scientists and students of political economy, turning as it does upon the immutable laws of supply and demand, the routine of crops and the survival of the fittest, as affecting a group of sister republics.

If the rats are exterminated there will not be fences enough to accommodate the cats, and if the number of fe- is reduced the Jackies will lose their malt. The common sense solution to the problem is to discover the happy medium in ratio and proportion between the cats and rats, so that there will be just sufficient of the one to interest the other, so that neither will be exterminated and where the natural laws of supply and demand will keep both in a healthy condition. It turns upon the fine point of determining just how many rats a cat can kill per annum, and how many rats there are, in order to get the cor rect number of cats to do the work prop erly.

According to an article in the San Domingo Herald, one planter, who carried on a successful warfare against the rodents with cats, killed during the course of one year 6,850,483 rats. The figures show evidence of a careful tally and are therefore accepted as correct, but the problem which struck me as being of peculiar interest, and for the best answer of which, received within two weeks a prize of $5 is offered, is to determine just how many cats there must have been, if every cat killed an equal number of rats. It is only an exercise in simple division, and yet I do not believe that every one can do it. SAM LOYD, New York Journal.

DETERMINE JUST HOW MANY RATS A CAT CAN KILL PER ANNUM, AND HOW MANY RATS THERE ARE, IN ORDER TO GET THE CORRECT NUMBER OF CATS TO DO THE WORK PROPERLY.

How Many Rats Should There Be to Keep a Certain Number of Cats Employed?

The Kits, Cats and Sack Puzzle.

A YOUNG miss of nine years, who has solved many of our puzzles, contributes the following quaint old puzzle:

As I was going to St. Ives,
I met seven wives;
Each wife had seven sacks,
Each sack had seven cats,
Each cat had seven kits.
Kits, cats, sacks and wives,
How many were going to St. Ives?

SOLUTION TO THE SHADOW PUZZLE.

IN this practical lesson in elementary engineering it was explained that at any one time all shadows are in the same proportion. That is, if at a certain time of the day your shadow is twice the length of your height, then all of the other shadows, of fences, trees, poles and everything else, will be just twice as long as the object which casts the shadow is high. So in the problem given it was told that the man who was just five feet high cast a shadow eight feet long, so it was required to determine the height of a pole which casts a shadow just 181 feet long.

It is plain that every eight feet of shadow in that 181 feet represents five feet of height on the pole, so we will divide the shadow by 8 and multiply by 5, which will give 113 feet one and a half inches as the correct height of the pole. The problem was given in its most simple form to impress a fact well worth knowing upon the minds of the young folks.

The terms and proportions might readily be raised so as to make it a difficult and complicated problem, but the principle remains the same and can be utilized according to the same method in solving all problems of this nature.

ANSWERS TO THE INTERNATIONAL AUTOMOBILE RACE.

THE automobile, and nothing but the automobile, is the talk of dom now, and the young society girl who hasn't an auto record is out of it this season, and excuses and evasion count for much with the set who were lucky enough to get their 'n before they were bought up.

It is all very well to hear some of them say, "I really would not care to drive an automobile," or "Mamma says they are entirely too dangerous," while in every moment of unconsciousness they are whistling:

"Papa wouldn't buy me a 'mobile;
Papa wouldn't buy me a 'mobile;
I've got a pony cart,
But it doesn't touch my heart—
I've got to have a record-breaking mobile."

Automobile races, after the manner of the chariot races, is sure to be a fad, and a lasting one, too, for, according to one of the big manufacturers who is booking orders for next year, speed is the great desideratum, and the forthcoming tests between the English, French and American manufacturers is of more importance than one would suppose, as it means millions and millions of dollars to the makers of the best machines.

Many answers, correct or otherwise, were received to the little automobile problem, wherein it was asked that supposing that in the proposed international race the odds were figured to be 8 to 3 against England and 5 to 2 against France, then what would be the odds against America?

It is one of those simple questions which every up-to-date sportsman should have right at his finger tips, just to have a clear conception of what is going on in the world, and yet out of the numerous answers received, not more than one out of every hundred was correct. The $5 prize for the best answer is awarded to WILLIAM J. MAHON, of No. 466 West Twenty-second street, New York City, who also solved the other puzzle correctly. He shows that the odds of 8 to 3 is equal to 56 to 21 against England, and 5 to 2 would be 55 to 22 against France, which would leave the odds 43 to 34 against America, as 56 plus 21 equals 77, 55 plus 22 equals 77, and 43 plus 34 equals 77. Viz: Out of 77 chances of winning England has 21, France 22, and America 34.

No. 5.---Story Book Charades for Little Ones.

MASTER CHARLES M. FOULKE, Jr., of No. 821 Fifteenth street, Washington, D. C., is the winner of Charade Prize No. 4. His was the only correct answer received before going to press. There were many near the correct solution, but Master Charles captures the $5. Here is his letter:

Sunday, Washington, D. C.

Dear Sir—I enclose one of your charade illustrations in to-day's paper and the les of the books it represents as follows:

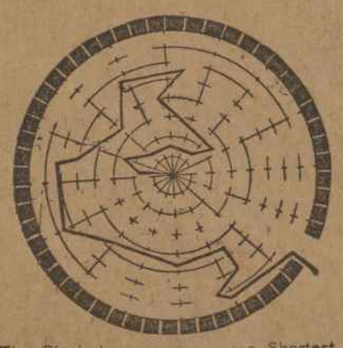
Hop O' My Thumb, Little Boy Blue, Mary, Mary, Quite Contrary, and Little Miss Muffet. If correct please send the prize to CHARLES M. FOULKE, Jr., No 821 Fifteenth street, Washington D. C.

NAME, AGE, ADDRESS.

In This Picture There Are Indicated the Titles of Four Stories Well Known to Children. The Little Boy or Girl Who First Sends In the Correct Solution to This Charade Will Receive a Prize of $5 in Cash. Send All Answers to Charade Editor, New York Journal.

HOW TO REACH THE HEART OF MORRO CASTLE.

OF course our puzzlists found no great difficulty in getting into Morro Castle; in fact, neither did Hobson, for his main trouble was in getting out, which, as all puzzlists know, is contrary to the general rule, for the simple way to solve any maze puzzle is to work it backward.



The Black Line [illegible] the Shortest Route to the Heart of Morro Castle.

Instead of starting from the outside to get in, start from the centre and pick your way out first and the difficulty goes all to pieces, which is much more simple than following Euler's exhaustive method of following one side of the wall, as if you were a blind man walking on continuously with his left hand always on that side of his path. The puzzle was a pleasing one for our juvenile friends, and proved to be somewhat in the nature of a little surprise to such as attempted to take a short cut, but were compelled to recognize the truth of the old adage about the longest way around sometimes being the shortest way across, as shown by the tracing of the answer in the accompanying drawing.

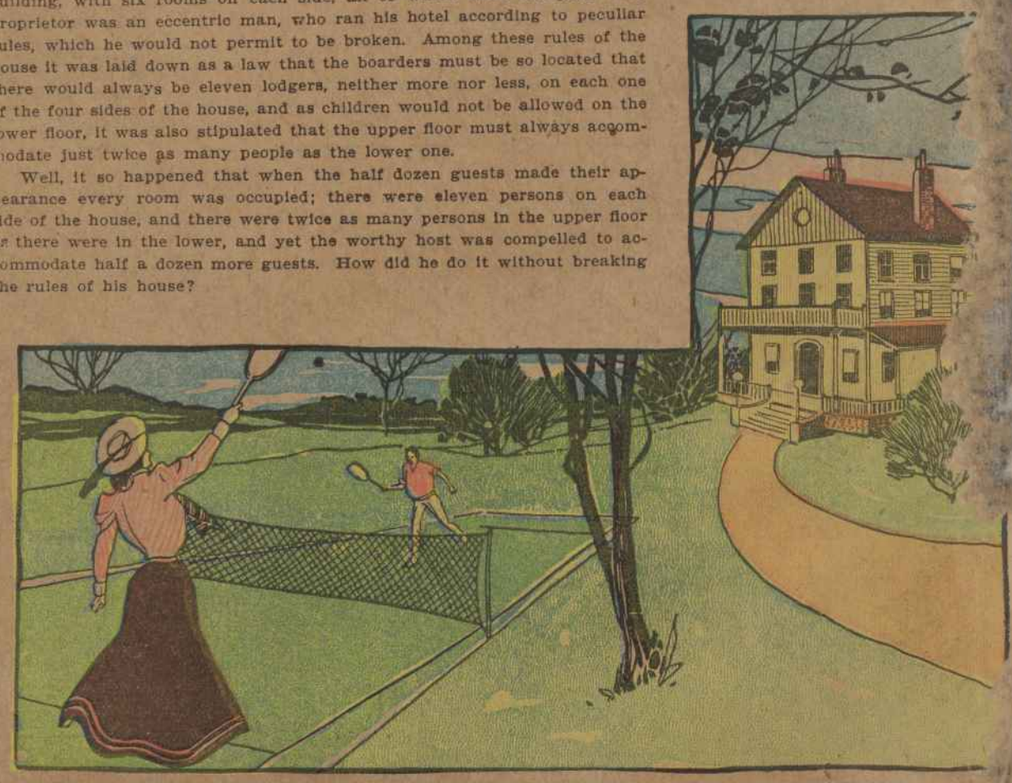
As previously explained, there are many ways of doing the puzzle, but the conditions being to reach the centre by the shortest possible route, it will be found that the answer given is decidedly the best which can be found.

THE OVERCROWDED SUBURBAN HOTEL PUZZLE.

THE many problems which confront the average inn-keeper are of a character to bear out the truth of the popular old saying "that a man may be a very smart fellow, but still not be smart enough to run a hotel." Of course all puzzlists are familiar with the story of the inn-keeper who had to solve the problem of putting eleven persons into ten rooms so as to give every one of them a separate room, but here is practical illustration of that other old saying that "it is a poor landlo who cannot always make room for half a dozen more guests."

It appears that at one of our Summer esorts the advent of ha dozen unexpected guests gave the host what appeared to be a very cult problem to solve. The house, as shown in the picture, was a square building, with six rooms on each side, all of which were occupied. The proprietor was an eccentric man, who ran his hotel according to peculiar rules, which he would not permit to be broken. Among these rules of the house it was laid down as a law that the boarders must be so located that there would always be eleven lodgers, neither more nor less, on each one of the four sides of the house, and as children would not be allowed on the lower floor, it was also stipulated that the upper floor must always accommodate just twice as many people as the lower one.

Well, it so happened that when the half dozen guests made their appearance every room was occupied; there were eleven persons on each side of the house, and there were twice as many persons in the upper floor as there were in the lower, and yet the worthy host was compelled to accommodate half a dozen more guests. How did he do it without breaking the rules of his house?



CAN YOU SOLVE THE PROBLEM OF HOW THE LANDLORD MANAGED TO ACCOMMODAE SIX MORE GUES IN HIS LITTLE HOTEL?